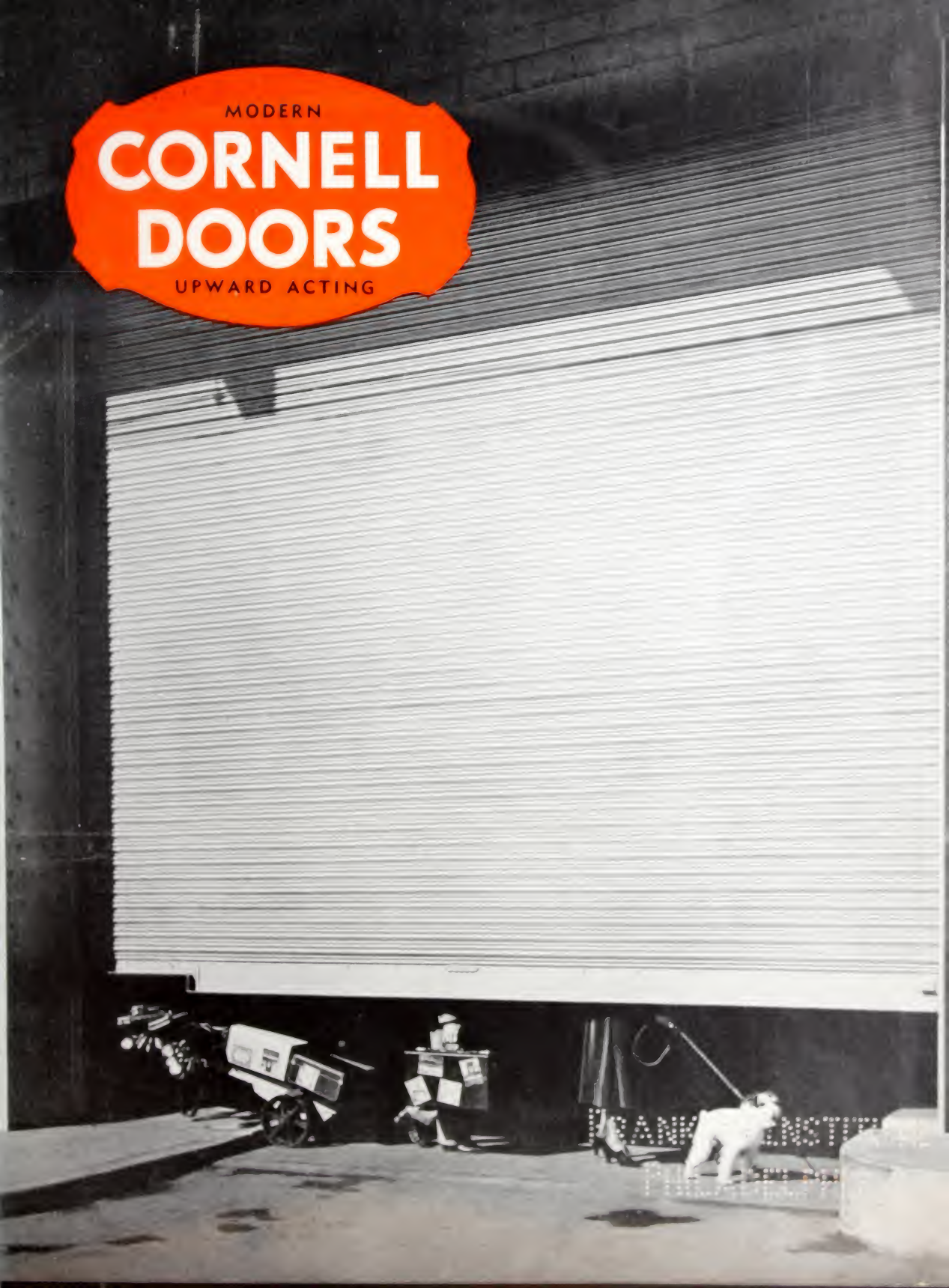

MODERN
CORNELL
DOORS
UPWARD ACTING

ROLLING DOORS

Made of interlocking metal slats running in vertical steel side guides and flexible to coil around an overhead pipe shaft. May be automatic closing and labeled by Underwriters Laboratories for fire walls, etc. Suitable for small windows, and door openings up to 50 feet wide and 100 feet high. Very conveniently motorized. Does not permit of glazing. **Pages 1, 3, 4, 5, and 6.**

ROLLING GRILLES

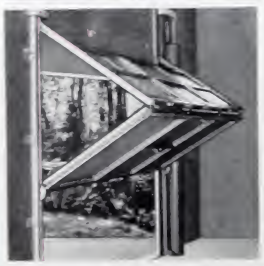
Made like rolling doors but admit free passage of light, air and vision. Suitable for corridors, store fronts, gates, windows, counters, etc. Clearances and operation similar to rolling doors. Counterbalanced with springs they operate very easily, while presenting an impassable barrier to intrusion. Made in steel, aluminum, bronze or stainless steel. **Pages 6, 7, 8, and 12.**

FLOAT-OVER DOORS

Composed of horizontal sections about two feet high connected by hinges. Made in wood, steel or other metals. Usually glazed. Lie overhead on the horizontal extensions of the side tracks. Counterbalanced by springs and readily adaptable to motor operation. Made in stock sizes for residence garages and in more rugged construction for larger openings. A very fast and light operating door. **Pages 8 and 9.**

CANOPY DOORS

One piece doors made in either wood or steel. Swing up half in and half out of opening. Can be glazed. A very economical construction, with few moving parts and operating with great smoothness and ease offer a wide range in design. Very adaptable for wicket, or pass, doors. Used for small garages; and industrial openings up to twenty feet or more. Counterbalanced by weights. **Pages 10 and 11.**



BI-FOLD DOORS

Two piece doors made in either wood or steel. Can be glazed. A heavy duty door for industrial installations. Counterbalanced by weights, or springs in an overhead shaft. Suitable for openings as large as twenty feet or more. **Pages 10 and 11.**

VERTICAL LIFT DOORS

Made in one section where headroom permits, otherwise in two or three sections telescoping. Wood or steel. Counterbalanced by weights, offer a perfect counterbalance. For openings up to sixty feet or more. **Pages 10 and 11.**

TURNOVER DOORS

Pages 10 and 11.

A WORD On DOORS In General

The cheapest door in first cost is probably the old fashioned wood sliding door. It utilizes the most valuable floor space in the building and is not weather tight. Swinging doors take more floor space, bang about and are generally unsatisfactory in large sizes.

Modern doors, upward acting, must be considered the most satisfactory closures. CORNELL makes every type of counterbalanced door and grille. They save valuable floor space, occupying unused space overhead. Materials and trucks can be stored right up to the doorway. They eliminate trouble from ice and snow, and irregularities of the sill.

CORNELL wood doors are the lowest in first cost. They are light and fast to operate, and offer a wide range in design. The one piece canopy is the most economical. The Float-Over is next and the Bi-Fold and Vertical Lifts slightly higher. They are limited in size and strength, and not fire-proof or completely burglar proof.

CORNELL steel doors are durable, fire and burglar proof. The one piece canopy is the most economical. The Rolling Steel, Float-Over, Bi-Fold and Vertical Lift are comparable in cost.

ALL CORNELL products are guaranteed for a period of one year against defects in materials or workmanship. More than seventy-five trained sales representatives are prepared to give local service and erection facilities.

•

CONSULT EXPERIENCED CORNELL ENGINEERS, BEFORE THE LAYOUT, FOR BEST RESULTS.

•

COMPLETE CATALOGUES OF ANY TYPE UPON REQUEST.

998-15

JUN 9 19

CORNELL ROLLING DOORS

SEE FRONT COVER
One of the Rolling Doors, Queen Mary Pier, Cunard Line.

Cable Address
Llenroc, N. Y.

Unusual Installation of Bronze Rolling Doors

60 Cornell Bronze Rolling Doors in the tower of the Riverside Church, New York City, to protect the priceless carillons. Designed to last a hundred years.

SINCE 1828 makers of fine doors, CORNELL IRON WORKS, INC., owes its origin to George Cornell who purchased his employer's metal business July 29th, 1828 and established his shop at the corner of Broadway and White Streets, New York City. In 1846 his younger brothers, John B. and W. W. Cornell, took over. Later this became J. B. and J. M. Cornell Company. The present officers are grandsons of John B. Cornell who took out one of the earliest patents on slat rolling doors in 1854. Located in New York for nearly one hundred years the CORNELL IRON WORKS moved to modern one story factory buildings in Long Island City, in 1925. The factory space has had to be doubled in 1936. With every facility for cold rolling, fabricating, machining, electric and gas welding, CORNELL IRON WORKS manufactures complete upward acting doors in all metals and woods.

CORNELL Rolling Doors have become a standard in the industry, with existing installations in use over sixty years.

GENERAL DESCRIPTION—CORNELL Rolling Steel Doors roll up out of the way overhead and waste no floor space. They are weather proof, burglar proof, and fire proof. The CORNELL Door proper is built up of a series of interchangeable interlocking mouldings, made of cold rolled, copper bearing, hot galvanized steel slats, from 22 to 16 U. S. gauge. It is stiff against pressure, but flexible to roll up. The usual location is on the face of the wall, which gives a completely clear opening and keeps the guides behind the masonry jambs. The doors and guides can be located between the jambs.

The door is retained at the sides in guides, and rolls up on an overhead steel pipe roller, called the shaft. The shaft contains accurately designed counterbalancing springs which permit the door to be operated with speed and ease. The shaft is supported at each end in a steel bracket, which is fastened to the heavy steel side guide. All weight is carried by the guides to the floor. If over 13 ft. wide the covering hood needs a center brace to the face of the lintel for stiffening, otherwise the door is self-supporting from jamb to jamb.

USES—CORNELL Rolling Doors can be used for practically any opening and are in wide demand for piers, warehouses, freight platforms, garages, office buildings, hospitals, power plants, etc. For exposed locations CORNELL Doors are recommended with the exclusive feature of non-corroding bottom slats of bronze, aluminum or rustless steel. The entire curtain can also be made of any one of these metals.

OPERATION—There are four typical methods of operation. Self-Coiling Type—Standard for openings up to 80 sq. ft. and below 8 ft. in height. Push up, and pull down by handles on the bottom bar. The quickest acting construction possible and can be worked from either side. Designation SCF or SCB denoting face of wall or between jamb attachment.

Hand Chain and Gearing Type—Standard for larger openings. Shaft revolved by endless hand chain, acting through single or compound gearing on an overhead gear bracket. Designation CGF or CGB.

Hand Crank and Gearing Type—Alternate to Hand Chain type, where operation by a removable hand crank is preferable. Designated HCF or HCB.

Motor Drive Type—Standard for the largest openings. Underwriters Labeled Automatic Closing Fire Doors in all of the above types.

Windlocks of special design are included without extra, for all doors over 25 ft. wide. They are attached to the slats, and may be applied to narrower doors under exceptional conditions. They lock into the side guides and prevent the curtain from blowing out in severe storms.

Springs for all CORNELL doors are made of a fine oil tempered wire and will not weaken with age or use. Each spring is tested in the shop before shipment and is capable of 25% overload. A spring adjusting wheel is also furnished for convenience in erection.

1st STEP

Channel shaped guides in place, fastened at the top with a through bolt, expansion bolts below.

2nd STEP

Steel brackets, attached to the guide, support the shaft. Makes for easy, accurate erection.

3rd STEP

Curtain in place fastened to shaft. Note dimensions; H equals Height, W equals Width.

4th STEP

Curtain rolled up with galvanized steel covering hood fastened to brackets.

Erection of a Cornell Chain Gear Face of Wall Door Type CGF

Four steps in the erection of a Cornell Chain Gear Face of wall door. Abbreviation "CGF" specifying the type. The chain and gearing may be placed on the left side if preferred. The pipe shaft contains the counterbalancing springs. This is the standard door for openings over 80 sq. ft., up to the large motor driven installations.

Dimensions on page 6

Cornell special design slats with interlocks to shed water and allow frictionless coiling. Note the big stiff double arch construction, slats 7/8 in. deep, and made from copper bearing steel. All Cold Rolled with temper and hot galvanized.

CORNELL NON-CORRODING CURTAINS

are made of cold rolled slats in bronze, aluminum or stainless steel. They offer a handsome finish and do not require painting. Bronze is highly resistant to deterioration from moisture and salt water. Aluminum is light and the door may consequently be operated rapidly in the larger sizes. It is ideal in the presence of coal and other sulphur gases making it of great value for railroad entrances and round houses. It is not as highly recommended for salt water, but resists nearly all acids, except hydrochloric. Stainless steel, while higher in price, gives nearly twice the strength of other metals and allows the use of lighter gauges on large doors. It is completely resistant to practically every form of deterioration.

CORNELL exclusive non-corroding curtain bottoms completely protect the curtain where corrosion first attacks all doors and shutters. The last 12 to 18 in. are made of bronze, aluminum or stainless steel slats. The extra cost is extremely small for the added protection and life.

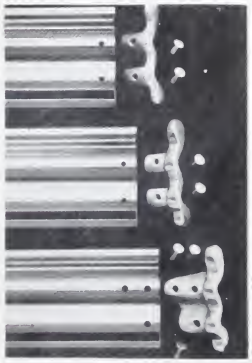
Cornell Non-corrodible Bronze Doors on Exterior Louvres, Museum Building

MOTOR OPERATION—CORNELL motor drives are made in a self-contained unit, completely assembled in the shop. The new model CORNELL Operators are specially designed and constructed for rolling doors. The worm is placed under the worm wheel, is completely enclosed, and runs in an oil bath.

Automatic starters and push buttons are furnished with all installations. Any number of remote stations can be used.

Electric brakes are furnished and special high torque elevator motors. An emergency hand chain operator is disengagable from the floor, releasing the solenoid brake and opening the motor circuit.

Operation—On pushing the button the solenoid acts to open the brake and the door moves up or down at a rate of approximately 1 ft. per second. On reaching the top or bottom of the door travel, the limit switch operates, stops the motor, automatically cuts off the brake magnet and lets the brake go on with full power, locking the entire mechanism against further travel. The action is foolproof. The door can be halted at any point by pushing the stop button. Push button stations for outside use can be furnished in waterproof boxes.



End locks of certified malleable iron, and tinned rivets, for standard, heavy and extra heavy service.

CORNELL door shafts are especially designed for motor operation, running on high grade roller bearings, with convenient Alemite grease gun connections readily accessible.

No additional headroom is required for the standard motor drive unit. The side room required is from 12 in. to 24 in. If side room is not available the drive can be modified by locating the motor above or below the coil of the door, or on the opposite side of the wall with through wall operation.

Complete wiring diagram is furnished, but field wiring must be done by another trade.

Cornell Motor Operator and Door

3 of 52 Cornell Counter Shutters—Forming an Impregnable Protection

Right.
End view of Cornell curtain, with shaft indicated at top. The non-corrodible bottom slats illustrated will protect the most vulnerable part of all exposed doors.

CORNELL ROLLING STEEL FIRE DOORS

Labeled door coiling under the lintel in the opening between the jambs. Shown in section. Gives a neat compact installation. Note the automatic baffle plate above the coil. Type Llenroc 101

CORNELL Rolling Doors have been thoroughly fire tested by Underwriters Laboratories, Inc., carry their labels, are approved by Factory Mutual Laboratories, and give the maximum savings in insurance rates. They close automatically upon the fusing of an exposed link, at 150° F. Each door carries its individual numbered label on the bottom bar, is inspected after manufacture, and recorded by the Underwriters.

Not Visible When Open — Partially Closed

Double labeled fire doors coiling overhead in the wall. The guides are recessed in the side jambs. Applicable to the finest rooms.

CORNELL labeled doors operate easily for normal service independently of the automatic devices. They can be operated by hand chain or hand crank, the gearing in either case dropping out of mesh automatically to give free closing. They are not difficult to raise after closure and are quickly reset. Upon fusing of the link the springs release and give a powerful starting blow and push. This is quickly checked, giving a braking action as the door descends. Governors are used to further retard large doors. The action is extremely positive and entirely dependable.

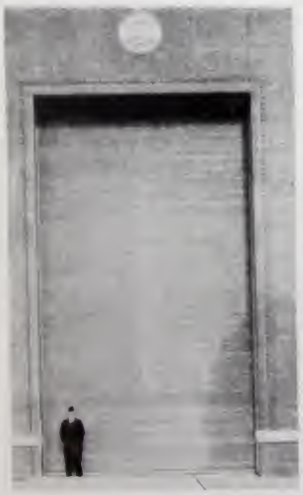
Baffle plates are included to stop passage of flame over the top of curtain. Continuous self aligning end locks bar passage around the edges of the curtain and preserve an even coil overhead. Fusible washers melt and give play for free expansion of all parts. All bearings and contacts are made of non-corrodible bronze. Labeled doors are designated by the trade-name "Llenroc" (Cornell spelled in reverse).

THE FOLLOWING TYPES ARE AVAILABLE—Firewall doors—Type Llenroc 1—20 gauge curtain, labeled up to 80 sq. ft., no dimension to exceed 12 ft. Carries oversize label up to 24 ft. by 24 ft. Two doors required for each opening. Partition and Vertical Shaft Doors are made to the same specification but openings only require one door. Exterior doors and shutters. Type Llenroc 3—22 gauge minimum curtain, labeled up to 100 sq. ft., carries oversize label up to 15 ft. by 15 ft.

SHORT SPECIFICATION—Rolling Doors where shown on plan shall be of Interlocking slat type as manufactured by CORNELL IRON WORKS, INC., LONG ISLAND CITY, N. Y. Operation, Self-Coiling, Chain and Gear, Hand Crank or Electric Motor, gauges and sections to be manufacturer's standard. Curtain slats shall be $\frac{7}{8}$ in. deep, approximately $3\frac{1}{2}$ in. c. to c., made of cold rolled copper bearing steel with temper, and hot galvanized. Standard gauges 22, 20, 18 and 16 U. S.

Guides shall be not less than $\frac{3}{16}$ in. thickness and run to the top of the coil and support the brackets, made of steel. The coil shall be covered with a galvanized steel hood not less than 24 gauge. All material and workmanship shall be guaranteed for one year.

LOCKING—Locking of small doors is accomplished with sliding chute bolts, fastened to the bottom bar, and engaging slots in the side guides. Hasps for padlocks can be furnished. Larger doors lock with a latch for the hand chain on one guide, provision being made for padlock. Hand crank doors can be padlocked at the crank box on the wall.



Forty-foot High Door. Transformer House, Public Service Co. Motor Operated.

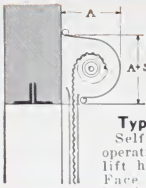
Forty-five Foot Wide Door. Allows R.R. Tracks to Enter at an angle. Motor Operated. Kirkman & Sons.

Illustrates wicket or pass door. When the rolling door is raised the wicket with its frame is swung to one side to give a clear opening. Note Hand Crank operator on the right.

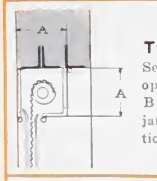
TYPES OF CORNELL COMMERCIAL SERVICE ROLLING DOORS AND ROLLING GRILLES

All Types

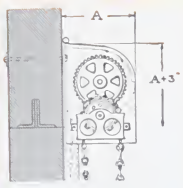
A = 14 ins. up to 7 ft. opening height. Add 1 in. for each 3 ft. additional height.



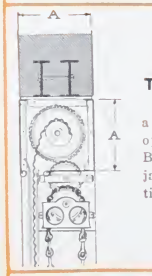
Type SCF
Self-Coiling operation with lift handles. Face of wall location.



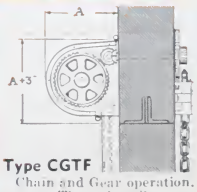
Type SCB
Self-Coiling operation. Between jambs location.



Type CGF
Chain and Gear operation. Face of wall location.



Type CGB
Chain and Gear operation. Between jambs location.



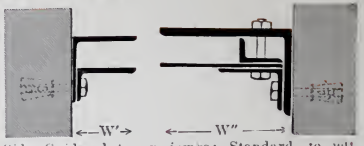
Type CGTF
Chain and Gear operation. Through wall.

Type HCF
Hand Crank operation Face of wall location.

CORNELL ROLLING DOOR GUIDES

Standard Side Guide. Face of Masonry Wall.

Side Guide and Steel Buck



Side Guides between jambs: Standard, to left. Wide guide, to right, on chain, crank or automatic side.

Commercial Service Doors Types SCF, CGF, HCF
W = 5¼" to 15' wide opening. Add ½" for every 5' additional
P = 3" to 15' high opening. Add ½" for every 5' additional

Underwriters Doors Types Llenroc 1, 11, 21
W = 5¼" to 6' wide opening. Add ½" for every 2' additional
P = 3" to 15' high opening. Add ½" for every 5' additional

All Types W' = W-2½"

Types SCB CGB
SCB W" = W'
CGB W" = W

All Types W' = W-2½"

Types Llenroc 101, 111
101 W" = W
111 { W" = W
W' = W

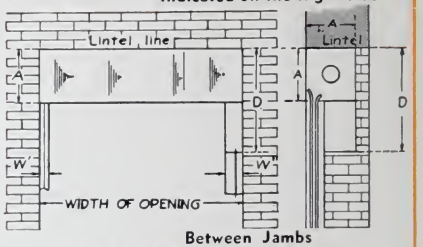
CLEARANCES—ROLLING DOORS AND ROLLING GRILLES

Operator or Automatic Indicated on the Right Side

Type — **Face of Wall**

SCF: A = 14" B = 5½" C = B D = A
CGF: A = 15" to 20" B = 5½ to 8" C = 6" to 12" D = 26" to 30"
HCF: A = Ditto B = Ditto C = 12" to 16" D = Ditto

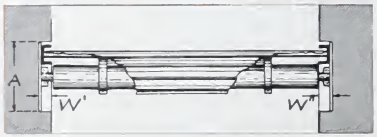
Underwriters (Doors only, no grilles)
Llenroc 1: A = 15" to 18" B = 8" to 9" C = 8" to 10" D = A
Llenroc 11: A = 18" to 24" B = 9" to 10" C = 9" to 12" D = 30" to 36"
Llenroc 21: A = Ditto B = Ditto C = 12" to 16" D = 30" to 36"



Between Jambs

Type SCB: A = 14" D = A
Type CGB: A = 15" to 20" D = 30" to 34"
Llenroc 101: A = 15" to 18" D = 20" to 24"
Llenroc 111: A = 20" to 24" D = 36" to 40"

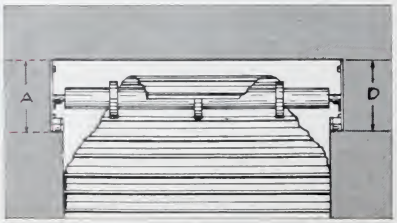
ROLLING DOOR OR GRILLE PLACED IN WALL

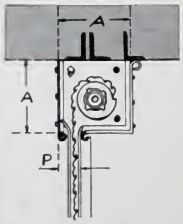


Plan of Section Above Shaft.

Top of curtain cut away to illustrate construction.

Masonry Openings Must Be Provided As Shown Recessed for Both Brackets and Guides





Sectional Elevation (for dimensions see Between Jambs tables above)

List of Types—Service Doors or Grilles—Face of Wall Location

Use **Type SCF**—Self Coiling push up operation up to 80 sq. ft. for doors; to 120 sq. ft. for grilles.

Llenroc 1 *for self-coiling Underwriters' labeled doors only.*

Type CGF—Chain and Gear operation for larger sizes.

Llenroc 11 *for chain operated labeled doors only.*

Type HCF—Hand crank operation. **Llenroc 21** for crank operated labeled doors.

Between the Jambs Location

Use **Type SCB**—Self Coiling operation, within above limits.

Llenroc 101 *for self-coiling labeled doors only.*

Type CGB—Chain and Gear operation for larger sizes.

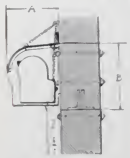
Llenroc 111 *for chain operated labeled doors only.*

Motor Drives can be supplied for any one of the above types.

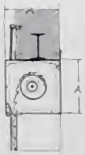
TYPES OF CORNELL LABELED UNDERWRITERS ROLLING DOORS

All Types

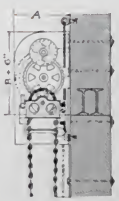
A = 15 ins. up to 7 ft. opening height. Add 1 in. for each 2 ft. additional height. B = A + 3 ins.



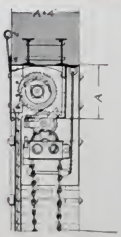
Llenroc 1
Self coiling operation with handles. Automatic door on face of wall.



Llenroc 101
Self coiling operation with handles. Automatic door under lintel.

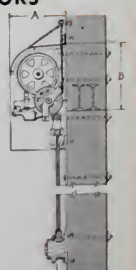


Llenroc 11
Hand chain operation. Automatic door on face of wall.



Llenroc 111
Hand chain operation. Automatic door under lintel.

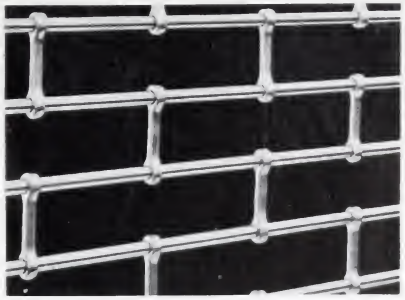
Llenroc 101
Double doors in a fire wall. One coiling above the other.



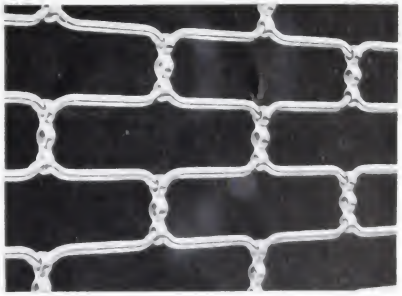
Llenroc 21
Hand crank operation.

CORNELL
Rolling Grilles

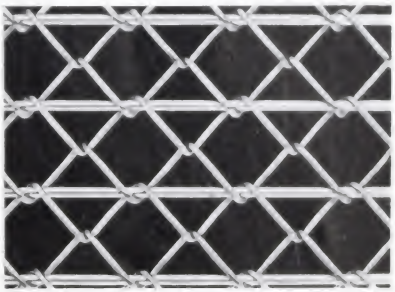
SEE BACK COVER
Polished Aluminum
Grille in Night Club.



Standard design—Straight bar type—Certified Malleable iron links with tubular spacers.



Crimped Bar design—Standard for aluminum, bronze or stainless steel grilles. See back cover.



Chain Link design. An alternate construction. Note the close mesh. Furnished in any of the above metals.

CORNELL Rolling Grilles operate like CORNELL rolling doors but are used to give equal security without blocking light, air, or vision. They offer the rugged protection of prison bars when closed and locked, and present an impassable barrier to intrusion or sabotage. At the same time, they raise and lower with the simplicity, and very nearly the ease, of window shades, or rolling fly screens. They are made in Steel, Aluminum, Bronze or Stainless Steel. They may be completely concealed in the wall, as shown on page 6 opposite.

CORNELL IRON WORKS introduced the Rolling Grille in America in 1931. One of the earlier installations consisted of four large CORNELL grilles in the Century of Progress Exhibition at Chicago. An eight page catalogue, sent upon request, shows further details and illustrations.

CORNELL Rolling Grilles are made of $\frac{9}{16}$ in. round hard drawn galvanized steel bars running continuous horizontally from jamb to jamb and locked into rolled steel vertical side guides. The horizontal bars are flexibly connected by unbreakable vertical certified malleable iron or steel links, or diagonal chain links, which permit the entire grille to coil overhead. The weight of the grille is counterbalanced accurately by fine oil tempered springs located in the overhead horizontal pipe shaft.

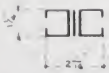
Types and operation, as well as clearances in general, duplicate CORNELL rolling doors on previous pages.

USES—For corridors and stairs in schools, and buildings open to the public, store fronts, entrances and gateways, counters and bars. Nursery and ground floor windows, and porches in residences. Factory gates and store rooms. Museums, stadiums, menageries and markets. Motor trucks, armories, forts, asylums and public and private buildings of all kinds.

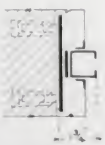
Rolling Grilles take the same bracket, hood and overhead clearances as rolling doors. See page 6 opposite. Types SCF, CGF, HCF, SCB and CGB.

The guides of Rolling Grilles require less clearance than rolling doors owing to the construction of the end links which lock inside the lips of the side guides. The following illustrations take rolling grilles up to 15 ft. in width.

1 Self supporting guide fastened at floor and ceiling, reinforced with channel.

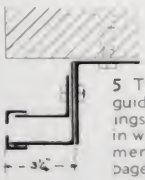


2 Double guide center post mullion.

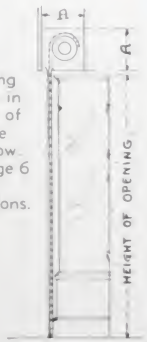


3 Guide fastening — for plastered corridor—supported by vertical plate, packed out to accommodate overhead shaft bracket.

4 Guide set in jamb where brackets are recessed, as in illustrations on page 6.



5 Typical grille guide for openings over 15 ft. in width. For dimensions see page 6 opposite.



Rolling Grille in Front of Store Window. See page 6 for dimensions.

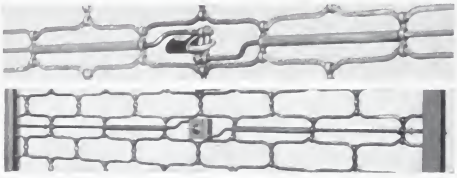
Bronze Rolling Grille, Restaurant

Dimensions on page 6

CORNELL ROLLING GRILLES

Dimensions on Page 6

Store Front Grille in 3 sections. Coils behind fascia



Locking Devices

The bars throw to both sides and engage holes in the backs of the side guides. Either Padlock or Cylinder Lock can be furnished, operable from either side. Springs return the bars to position when the lock is released.

SPECIFICATION—Rolling Grilles where shown on plan shall be the continuous bar type as manufactured by CORNELL IRON WORKS, INC., LONG ISLAND CITY, N. Y. They shall consist of galvanized hard drawn steel bars, each bar continuous from side guide to side guide, not less than 5/16 in. in diameter, and not more than 2 in. center to center, joined together with strong certified malleable iron or steel links not more than 7 in. center to center.

The ends of the bars shall be provided with certified malleable end links of self aligning construction to insure a straight coil.

For openings less than 15 ft. in width the side guides shall consist of 1¼ in. square open back tubes, with ¼ in. lips to prevent grille from being forced out of guides. Heavier and deeper guides, built up of plates and angles, shall be used on larger hand operated grilles, for particularly severe service, where additional side clearances are required, and on motor operated grilles. Grilles up to approximately 120 sq. ft. shall be operated manually, push up type. A pole with hooks shall be provided where this operation is specified. Grilles of large size shall be provided with hand chain, hand crank, or motor operator.

LOCKING—Shall be accomplished by a double throw bolt, of not less than 5/16 in. diameter hard drawn steel rod, located waist high, with a padlock (by others) in the center of the grille and operable from either side.

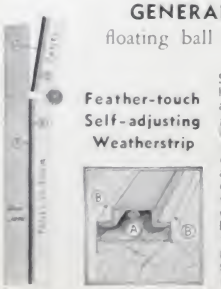
Electric Operated Motor Entrance Grille 29 x 15 ft.

CORNELL FLOAT-OVER DOORS

CORNELL Float-Over Doors are recommended for openings where quick, sure and easy operation is desired—for garages, both domestic and commercial, and for all openings from which deliveries and shipments are made, from small loading platforms to large steamship piers, for fire houses, with automatic opening devices, and for boat houses.

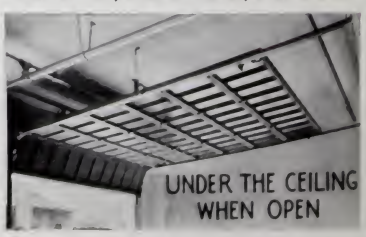
CORNELL Float-Over Doors slide overhead under the ceiling and take up no floor or sidewalk space and no wall or window space on the sides. They are not affected by ice, banked snow or wind. The entrance is never obstructed by these doors. Out of the way of damage when up they cannot blow shut or open, wedge or jam. Easily applied to existing buildings.

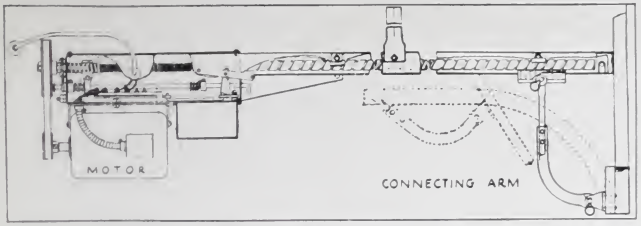
All Glass, Cornell Float-Over Door, Type K



GENERAL DATA FOR ALL FLOAT-OVER DOORS—Doors roll on floating ball bearing wheels operating in formed cold rolled steel tracks fastened to continuous steel angles from sill to lintel. The doors are hung on high test preformed cables running over roller bearing sheaves. They are weatherstripped from sill to lintel. While clear Sitka Spruce is standard the doors can be made of any available wood. All doors are carefully sanded, and reinforced with steel dowels. Steel doors, Type S, are galvanized and shop painted.

Stock Sizes Type D
8 ft. x 7 ft., 8 ft. x 7-6 ft.; 8 ft. x 8 ft.





Standard Motor Operator

All-Glass Type SF Steel Float-Over Doors

Sections of all types of Float-Over Doors are from 20 to 30 in. high. One section is usually designed for glazing, with lights about 12 x 18 in. for Domestic Garage Doors; 2 sections for larger doors. Any number of sections can be so arranged. Glass is not furnished unless ordered as an extra. Door sections are shipped with hardware attached. Hinges are 11 gauge and through bolted in all cases. Every door is carefully weighed when ready for shipment and each spring is tested to match, with an additional stretch to insure a proper safety factor. Standard stretch springs can be mounted on rods for safety, or torsion springs on shafts can be furnished. For large doors 3 in. cold rolled track and solid steel ball bearing floating rollers are standard, with strong reinforcing for the overhead tracks. All parts may be galvanized at small extra cost.

DESIGNS—To suit architectural treatment. Raised panels, slab or V-joint surfaces, segment top, metal covered wood. Tubular metal doors are furnished in galvanized steel, aluminum, bronze and stainless steel; either paneled or flush type. Wicket, or pass, doors can be furnished in all types. Mullions either swinging, sliding or removable are available to limit the size of doors for wide openings.

Jambs should be prepared for all wood doors with 2 x 6 in. casings, with flush bolts or anchors, and extending at least 15 in. above lintel as indicated. All Float-Over Doors can be attached to steel bucks, or direct to the masonry.

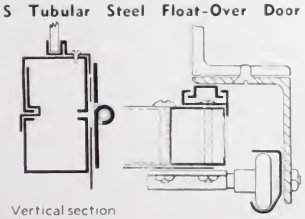
Headroom should be 15 in. although 12 in. can usually be taken care of and even less if the jamb clearances are sufficient. For motor operated doors allow 6 in. additional headroom. Large chain operated doors require 20 in. or more headroom. It is best to refer questions of close clearance to the factory.

Each door is supplied with a cylinder locking device which can be operated from either side and keyed separately, alike, or master keyed.

MOTOR OPERATION—Electric motor operation can be furnished with all Float-Over Doors. The standard construction is an overhead push and pull operator. Connection is made to the top section of door with an arm easily detachable for hand operation. Drives have safety devices to present accidental damage if the door meets any obstruction. Motor drives for smaller doors are arranged to plug into the nearest light socket. Control is by single push button for stock doors, with as many stations as desired, and two or three button stations, or toggle switches, for larger doors. Alternate constructions allow key switches in driveway posts, wheel tread switches in the driveway, pull cord switches overhead, radio or electric eye. On the larger sized operators a solenoid brake is furnished and hand chain for emergency operation.

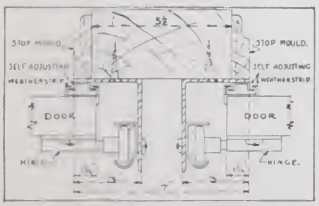
Standard Details for Type S Tubular Steel Float-Over Door

Steel doors are made on frames of 2-in cold rolled copper bearing galvanized steel tubes, machine mortised and tenoned. Galvanized steel sheets are electrically welded to the frames to make up the panels. Tubes are 20 or 16 gauge; sheets 22 gauge or heavier. Paneled either side, flush the other side

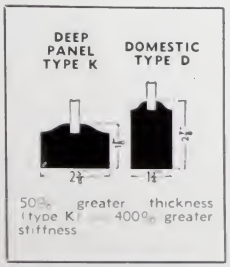


Vertical section through meeting rails, with glass above and sheet below.

Horizontal section through stile showing jamb construction applied to steel buck

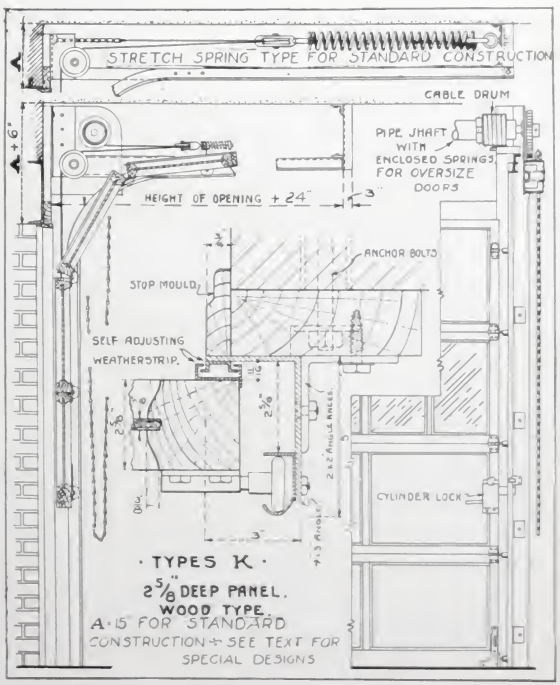


Center post where 15 in. headroom is available. For lower headroom a 12 in. post is necessary.

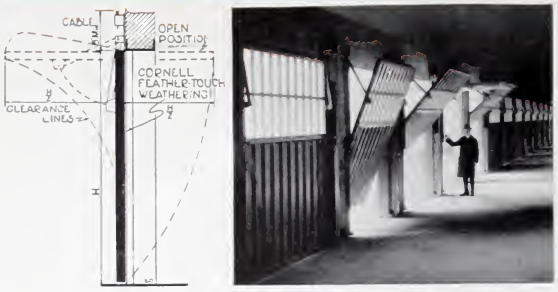


50% greater thickness (type K) 400% greater stiffness

Special Tubular Steel Float-Over Doors 18 ft. x 14 ft., motor operated



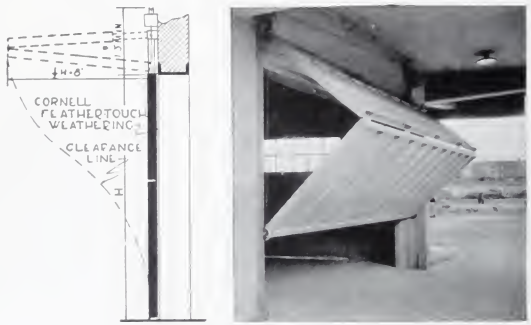
CORNELL RIGID DOORS



CANOPY

The CORNELL Canopy is the simplest upward-acting door built. This one-piece door is lifted at its center, and by means of a simple linkage, without the use of ceiling tracks, is turned to an open position under the lintel with half its height inside and half outside the building. The door is perfectly balanced, easy and rapid in operation by hand or power, and requires a minimum of clearance space. The spring weather-strip, which provides perfect closure and a smooth jamb surface, is exclusive with CORNELL. This door can be built to large sizes and can be equipped with sash, also pass doors. These features, coupled with its low cost, make it a logical type for garages, loading platforms, freight sheds and markets.

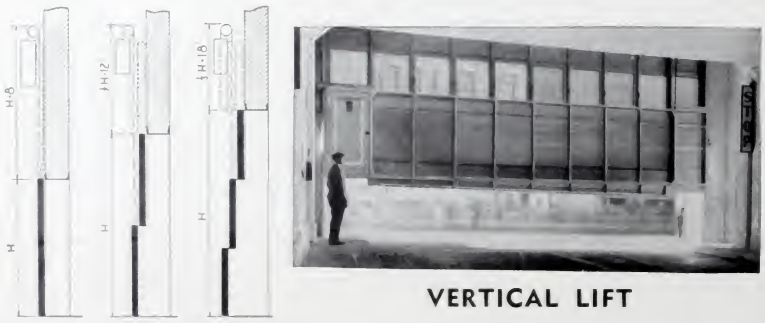
Specification—Door shall be of the one-piece canopy type as manufactured by CORNELL IRON WORKS, INC., Long Island City, N. Y., swinging between jambs and turned by links to an open position under the lintel. Weather-strips shall be attached to the door and shall not project into opening when door is raised.



BI-FOLD

The CORNELL Bi-Fold or jackknife door is a type which has been standard for many years for industrial use. It can be built to large sizes with sash, also pass doors, and can be installed on either inside or outside of the building with perfect weather-protection in either case. Hinges, lower rollers and all load-carrying wheels are extra-large and full roller bearing. The door may be balanced by torsion springs, or by counterweights, and is easy to operate in any size. It requires somewhat greater headroom than the Canopy type and is slightly higher in cost. The Bi-Fold type is suitable for all industrial openings, particularly such locations as pier sheds where the projection of the Canopy door is objectionable.

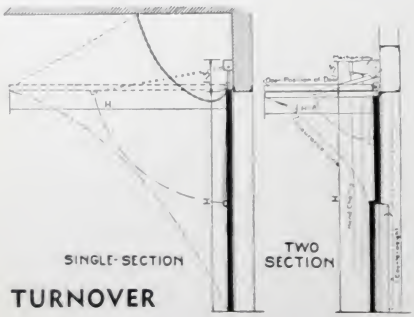
Specification—Door shall be of the Bi-Fold type as manufactured by CORNELL IRON WORKS, INC., Long Island City, N. Y., built in two sections hinged together at the center, with the upper section hinged to the building structure with offset roller-bearing hinges. Self-adjusting weather-strip shall be attached to the door.



VERTICAL LIFT

Where overhead space permits, the Vertical-Lift door, as built by CORNELL, is an ideal type, taking up a minimum of useful space and offering perfect balance and maximum weather-tightness. It can be built to very large sizes, and is readily adaptable to power operation and automatic closing. The door sections are provided with guide rollers designed to hold the door tight against the jambs when closed and free it as it starts to open. Weather-strips are provided on all four sides.

Specification—Doors shall be of the single, two, or three-section vertical-lift type, as manufactured by CORNELL IRON WORKS, INC., Long Island City, N. Y., with ball-bearing guide rollers arranged to insure free operation and tight closing.



TURNOVER

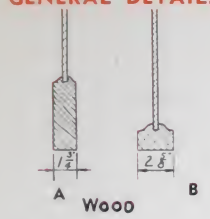
The Turnover door has been standard for many years for pier sheds, with the single-section type favored for openings up to ten feet high and the two-section type preferred for higher openings. Structural steel with heavy sheets on the lower section and sash in the upper has been the standard construction for modern pier sheds. CORNELL IRON WORKS is prepared to build either the single or the two-section type to any specification in either wood or structural steel for pier shed or industrial work. The general characteristics of the Turnover door are the same as the Bi-Fold and its clearance requirements are similar. It can be power-operated if desired but requires heavier motors than the Vertical-Lift or Canopy types due to the force required to start the door opening.

Catalogs, Folders, Detail Drawings of all Cornell Upward Acting Doors and Grilles are available, and will be supplied upon request without obligation.

CONSTRUCTION DETAILS

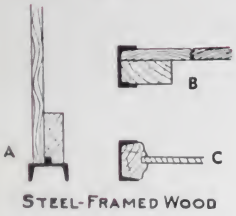
CORNELL RIGID DOORS

GENERAL DETAILS



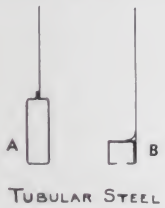
WOOD. Stiles and rails 1¾ in. or 2⅝ in. thick with plywood panels. This is a standard construction suitable for medium service. When properly braced it can be used for openings as large as 12 ft. x 12 ft. The same details are used with kalamein construction.

Specification: Door section shall be made with Sitka spruce (fir, white pine, cypress) stiles and rails 1¾ in. (2⅝ in.) thick with ⅜ in. (½ in., ¾ in.) plywood panels.



STEEL-FRAMED WOOD. A door suitable for the heaviest service in the largest sizes. The wood section is enclosed in a structural-steel frame with reinforced corners. The frame is unobtrusive but prevents deflection, swelling, and warping, and permits ready replacement of damaged panels. Any type of wood door can be thus enclosed, but for industrial service we recommend a batten-type door using a 2-in. frame with ⅞-in. sheathing on the outside.

Specification: Wood door sections shall be fully enclosed in frames of structural steel with corners reinforced. Guide rollers and cable connections shall be attached to the frame.



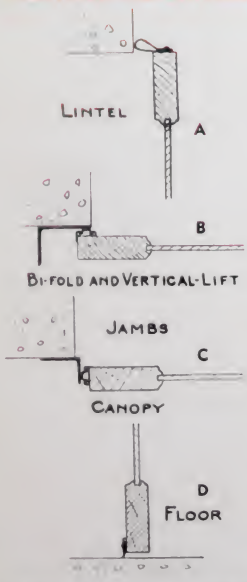
TUBULAR STEEL. Construction permits the use of paneling with the rigidity of steel. Built to order to any specification.

STRUCTURAL STEEL. The heaviest construction, particularly suited to industrial service. Depth of frame members varies from 2 in. to 6 in. or more according to the opening size, but for the majority of openings up to 20 ft., 3-in. or 4-in. members will be found suitable. The frame is braced as necessary, and covered on the outside with flat steel sheets 16-gauge or heavier. The surface may be broken into panels with flat strips if desired.

Specification: Door section shall be framed of structural steel members with reinforced corners, covered on the outside with flat steel sheets laid with butt joints and attached to frame members with ¼-in. button head rivets or by arc-welding.

In addition to the above, CORNELL doors have been built in many special types—insulated, sound-proofed, ventilated, corrosion-proofed, etc.

WEATHERING DETAILS

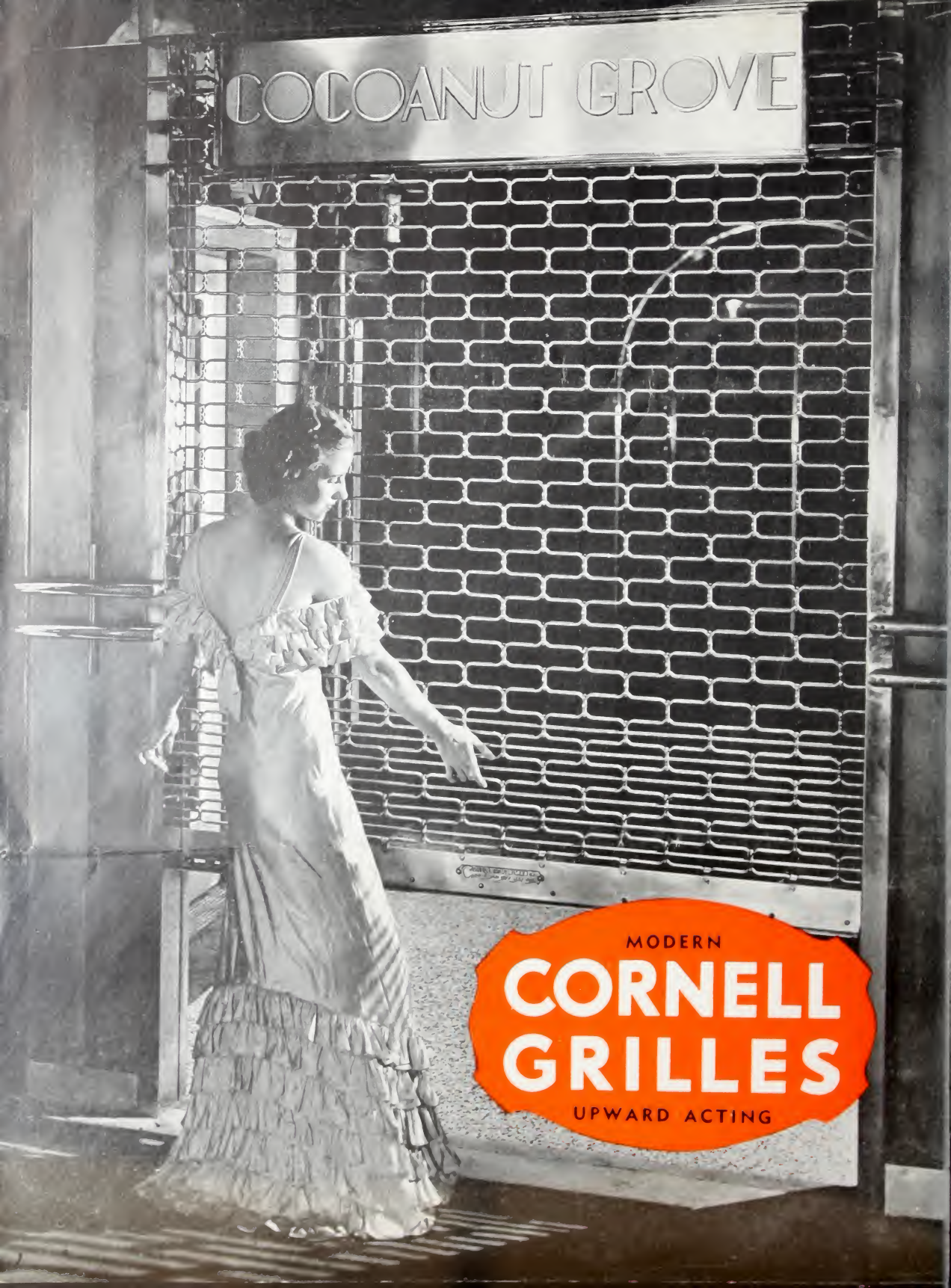


WEATHERING. CORNELL doors are regularly weathered at top and bottom with cloth-inserted rubber strips secured by steel angles; and at the jambs with the exclusive CORNELL self-adjusting spring weathering. (See Diagrams at left.) This latter design permits the construction of a canopy-type door without projecting weather-strips—a feature offered by no other manufacturer.

COUNTERBALANCE. CORNELL doors are regularly counterweighted, but any type can be furnished with accurately-designed torsion-spring counterbalance. Where space at the jamb is limited, the counterweights can be located at any point in the room, without special construction, by the use of CORNELL self-aligning sheaves.

CLEARANCES—on any of the types illustrated at the left on Page 10, jamb clearances will vary from 3 in. to 5 in. on the idler side of door and 8 in. to 20 in. on the counterweight side. Doors balanced with torsion springs will require 4 in. to 6 in. each side. Where jamb space is limited, counterweights can frequently be placed at some distance from the door. For the canopy door, minimum clearance overhead is 8 in. for the push-up type and 15 in. where geared operator is used. Bifold and turnover doors require minimum clearance of 15 in. Single section vertical-lift doors will require headroom equal to the opening height plus 8 in., two-section will require half the opening height plus 12 in. and three-section will require one-third the opening height plus 18 in. These are approximate and vary somewhat with the height and size of the door.

OPERATION. Doors of medium weight, in sizes up to 10x10 ft., can be pushed by hand, due to their perfect balance in all positions. Larger doors are furnished with geared operators using hand chains, or can be operated with electric or oil-hydraulic power. Using the latter type of operator, the largest doors can be made self-closing in case of fire, and can be instantly restored to normal service without readjustment of the counterweights.


COCOANUT GROVE
MODERN
CORNELL
GRILLES
UPWARD ACTING